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ABSTRACT

This paper discusses the relationship between education and earnings, explaining that most states still consider college preparatory courses to be electives, and the skills and content needed for further education are not typically reflected in state high school assessments. It discusses the implications of this mismatch for young people, focusing on current market returns for education; the importance of credentials as well as skills; the job market; low-end jobs; skills for success in postsecondary education; the mismatch between preparation and goals; the convergence of work and college; college-prep for the workplace; the benefits to all students of taking high-level courses regardless of their academic record prior to enrollment; equal educational opportunities; visionary school districts defying conventional wisdom and getting results; Texas and Indiana taking action to align high school graduation and postsecondary entry requirements; and a 21st-century curriculum. Recommendations for establishing a common curriculum and providing it to all schools include a focus on data; high school courses aligned to postsecondary requirements; good teachers and instruction; time and support for students to learn challenging content; and the federal government's role. (Contains 34 references.) (SM)

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THINKING K-16

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A New Core Curriculum For All

Aiming High For Other People's Children

I'll never forget the first time that I heard a fellow educator wonder aloud not whether it was *possible* to prepare all students—including those who were poor or members of minority groups—for college, but whether it was *desirable*.

I was out in the Midwest working with a statewide group of counselors. As I always do, I was sharing with them not only data about the achievement gaps separating different groups of students, but about the opportunity gaps that feed into those performance differences. The inferior curriculum. The inexperienced and under-educated teachers. The watered down assignments. Basically, what I asked them to do was to imagine what might happen if we educated these youngsters as the future doctors, senators, and teachers they want to be instead of the salesclerks, janitors and laborers that many of their parents are.

I could tell from their faces that many in the audience were struggling with this concept, and I assumed that their struggles were mostly about whether we could actually accomplish this goal of readying all students for postsecondary education.

But it turned out that, at least for some, the struggle was quite different. Indeed, one middle aged man expressed his concerns this way. "We could probably do what you're suggesting. We could put these kids in tougher classes. We could beef up the rigor of their assignments. We could assign them some of our strongest teachers, instead of our novices. But," he said, "I'm thinking about the Black lady who served me my room service breakfast this morning. She seemed so very happy. And I can only think that, if she had gone to college for even a little while, she probably wouldn't be so happy."

His comment literally took my breath away. But as I looked around the audience I could see

Inside Thinking K-16

A New Core Curriculum For All 1
A Common Core Curriculum For the New Century 3
Why Texas Backs Rigorous Course-Taking by John H. Stevens 20
What Students Need to Succeed 26

UD 035 650

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that many were nodding in agreement.

It's many years later and I'm no longer shocked by such comments. Indeed, I have heard them in every region of the country. But I continue to marvel that so many *educators* can be so clear about what they want for their own children—college, always college—but so comfortable with something else for other people's children.

Consider, for example, the words of a Virginia professor responding to a proposal to eliminate the high school vocational track: "If our education system reaches such a point, who will become the next generation of plumbers, electricians, maintenance personnel, chefs, customer service employees, landscape technicians, and builders?" (She ought to spend a little time looking at what high school courses are necessary to gain access to apprenticeships and certifications for some of these jobs!)

Some, of course, are shockingly direct about all this, as is the case in arguments explored more fully later in this issue, that educating more students (read: *those* children) through college will drive down the economic returns to those who get that college education (read: ***our own*** children).

But, though less direct, I have to wonder whether the passivity of leaders in higher education and business is any less harmful—or, for that matter, any less shameful.

In higher education, for example, it is well understood that students who don't complete a full college-preparatory curriculum in high school might enter college, but will almost never succeed.

In K-12 it is—or at least should be—well understood that students who take more demanding courses are not only more likely to do well on state-required assessments, but even more likely to pass their courses.

Business leaders know, too, that the knowledge and skills typically taught in the college-prep curriculum are far better aligned with demands in today's workplace than are the "skills" typically taught in vocational courses.

Yet even in view of ample research on all these things, leaders in all three sectors are mostly silent. Sure, we all have a slew of special outreach programs, counseling efforts, and scholarship programs to get a few more of "their" children on a path to college.

But, except in a few forward-looking places like San Jose, California and now, the entire state of Texas, we don't say ALL. We don't make our response systemic. And we don't kill off, once and for all, the dead-end "alternatives" to rigorous academic work in high school—alternatives like "Nail Technology," "Reprographics," "Carpets and Floors."

It's a new century. It's time to set aside our Industrial Age curriculum and agree on a common core curriculum for the Information Age.

As is beginning to happen in a few states, higher education—including two-year colleges—and business have to help get the process rolling by getting much clearer about the skills and knowledge actually necessary for success in postsecondary education and training. And no, we don't mean just their usual "more" than whatever K-12 is currently delivering, but, rather, a rock-solid, parsimonious list.

Then K-12 folks, probably with participation from higher ed and business, need to do some course redesigning. Not necessarily taught to all students in the same ways. But taught to all students. Now.

To do anything else is nothing short of educational malpractice.

Kati Haycock
Director

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A Common Core Curriculum For the New Century

by Patte Barth

What does a high school diploma do for new graduates?

Offer a chance at jobs that support a family? Qualify its holder for entrance into the military? For decades, Americans have come to expect a diploma to do at least those things. But today, most young people and their parents also expect it to open the door to postsecondary education, whether directly after high school or later to advance their careers.

Our young people understand the relationship between education and earnings better than anyone. Approximately three-quarters of all high school graduates are immediately using their diplomas to gain access to more schooling. Many more will seek additional education over the course of their adult lives.

Regardless of the path they initially choose, these young people are gambling on the same thing—that their diploma will prepare them to succeed.

But it's not exactly a safe bet. Despite skyrocketing college-going rates, all but a few states still consider college-preparatory courses to be *electives*. Neither are the skills and content needed for further education typically reflected in state high school assessments.

In the pages ahead, we look at the implications of this mismatch for young people. What does the labor market hold for young people with varying levels of education? What does it take to succeed in college compared to the demands of work in a rapidly changing marketplace? How do today's high school requirements and course-taking patterns stack up against those needs? Finally, we examine the following question: what can we do to assure that all, rather than just some of our young people are adequately prepared for the future?

While we focus primarily on the economic benefits of education that are so important to children and their parents, we should be clear from the outset that economics are not the only reason all students need a solid academic preparation. Day-to-day life has also become more complicated and ambiguous. As individuals and as citizens, we are required to make decisions that increasingly demand high levels of understanding and judgment.

A trip to the doctor, for example, often requires an understanding of statistics and analytical ability so we can compare the relative merits of particular treatments. In our neighborhoods and workplaces, we must communicate with people from different backgrounds who often speak other languages or have different cultural values. And we are called upon as voters to make choices about difficult issues regarding the environment, science breakthroughs and others where the answers involve trade offs and few precedents to guide us. We need to know enough to be able to navigate these unfamiliar waters.

But ultimately, we must prepare all young people for success because it is the right thing

to do. Despite decades of effort, our country has been unable to conquer the inequities that divide us as Americans. The data show that as individuals' education and skills increase, the income gap closes. Yet educational opportunities are not shared equally among our young people. Nor are the schools and colleges they do attend doing an equal job at preparing youngsters to high levels of performance.

Which brings us back to the high school diploma. What should it say about the new graduate and where should it take him or her? The question is turning out to be fairly easy to answer: a diploma should prepare its holder for both postsecondary education and the demands of the workplace. This report explains why.

Current market returns for education

Young people today with a high school diploma can expect somewhat better odds for full-time employment than those who leave school without a diploma. Graduates can also count on earning more money.

But not much. The benefits of a high school diploma alone turn out to be slight, especially when compared to the employability and earning power that college brings.

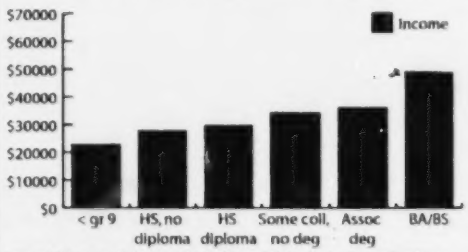
While adults with a high school diploma have a clear edge in the job market over those without it, they are *twice* as likely to be unemployed as those with a Bachelor's degree. In the flush market of the late-1990s, the average unemployment of high school graduates was a relatively low 4%. Not bad, but certainly not as good as the 2.5% for workers with Associate's degrees and 1.9% for those with B.A.s.[1]

The real reward, though, isn't just having a job. It's what that job pays. Young adults with a high school diploma earn close to $2,000 more annually than their peers who left high school early. But they earn $6,000 *less* per year than those with an Associate's degree, and nearly $20,000 less per year than those with a B.A.[2] [Chart 1]

Over a working lifetime, these dollars really add up. According to the Census Bureau, full-time workers with a B.A. earned $2.1 million between age 25 and 64, compared to $1.2 million for workers whose education stopped at high school graduation. Analysts for the Bureau expect these differences to increase over the coming years.[3] [Chart 2]

Chart 1

Education Pays: Annual Earnings of 25-34 yr-olds by Attainment, 2001

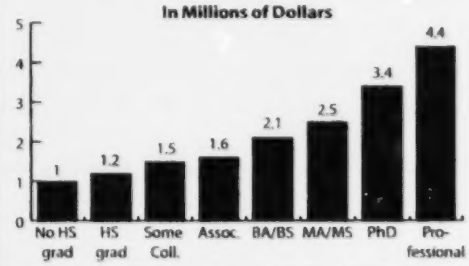


Source: U.S. Bureau of Labor Statistics and Bureau of the Census, Current Population Survey, March 2002

Chart 2

A Degree's Worth Over A Lifetime

In Millions of Dollars



Source: US Census Bureau 2000 Data, from Arnas, "Survey finds 2.1 million reasons to earn college degree," Chicago Sun-Times, July 18, 2002. Numbers are in 1999 dollars.

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The relationship between education and wages is not entirely new, of course. But changes in the workplace over the last few decades make the link considerably stronger. The Information Age set off a rush to find skilled workers in many occupations and simultaneously reduced the proportion of unskilled jobs. Long gone are the days when the plucky, but unschooled youth could work his (or her) way up from the shop room floor. Not only do jobs on the way up the career ladder require college-level skills, the positions on the bottom rung can demand more than a standard high school diploma, too.

Labor economists Anthony Carnevale and Donna Desrochers cite two phenomena that point to the economic need for more skilled workers. First is the growth of jobs in occupations that have traditionally required some college, notably in the fields of education and health-care. The second phenomenon, and by far the most significant, is what they call the "upskilling" of jobs that did not require college before.

Office workers, for example, comprise the largest segment of workers today and their ranks are growing. These workers are also among the most educated. But they weren't always so. Thirty years ago, 38% of office workers had some college. Now more than two-thirds—69%—are college-educated.[4]

Not just credentials, skills count, too

There is considerable pay off in today's job market for those with more years of education. But it's not just paper credentials that count. Researchers have shown that individuals with highly developed skills gain greater advantages in the workplace over those with similar educational credentials but with less developed skills. Simply, the more you know, the more you earn.

Standards vs. Curriculum?

States and districts across the country have invested considerable time, effort and resources developing a system of K-12 standards and assessments in part to get away from the tyranny of the carnegie unit. Readers may therefore be wondering if The Education Trust is now advocating a return to the not-so-good ol' days of promotion by seat time, or worse, the imposition of dual requirements that will literally strangle high school students and their teachers.

No such thing.

At the moment, though, high schools are organized around courses. What we are saying here is that certain courses have a strong relationship to later success in the workplace and in college. Abundant research, for example, makes it very clear that students with a course called "Algebra" are better off than if they had taken "Consumer Mathematics."

Yes, we know that not all algebra courses were created equally. States, districts and schools still have a lot of work to do—including providing model lessons, sample assignments and student work, and benchmark assessments—to help teachers of courses with the same names to make sure they are teaching to the same standard.

But this report discusses a curriculum that we think is a good jumping off point for the rigorous education that all students need and deserve. Eventually, we hope there will be multiple ways for students to access and engage with the same content. In the meantime, though, these courses are better than their watered down alternatives.

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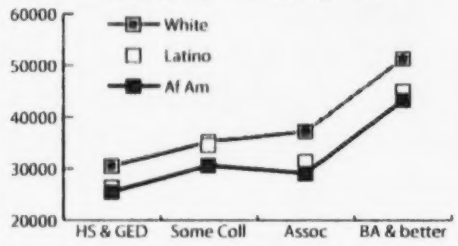
The benefits of a good academic preparation accrue across racial and ethnic groups, making education the truly great equalizer in this new economy. Chart 3 shows the average wages for African American, Latino and White young adults by level of educational attainment. Across the board, the years spent in school translate into higher wages. Yet the time itself does little to narrow earnings gaps between groups. However, analyst Andrew Sum shows that based on *knowledge and skills*—as opposed to *credentials* alone—the earnings gap between people of color and Whites narrows. At the highest literacy level, income inequities between groups are virtually nonexistent.[5] [Chart 4]

Chart 3

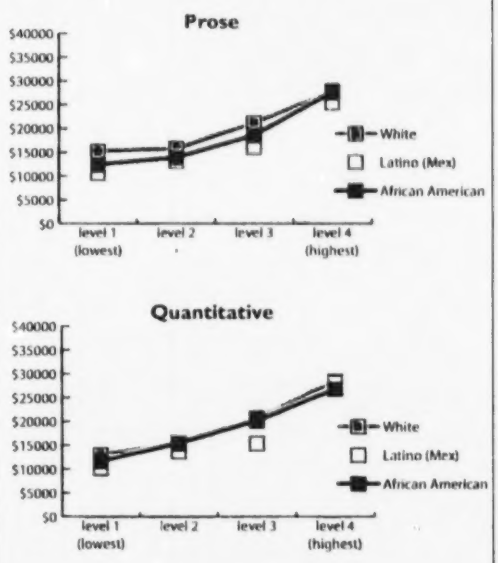
Degrees Pay For Young Adults of All Groups
Average yearly earnings, age 25-34



Bureau of Labor Satistics, Census Population Survey, Annual Demographic Survey, March 2002, 2002 average earning, full-time, year-round workers

Chart 4

At Highest Literacy Level, Income Gaps Close



Andrew Sum, "Literacy in the Labor Force," NCES, September 1999

The economic advantage of education to our children's future is obvious. The greatest returns convey to those with at least a Bachelor's degree and the most developed skills. Nonetheless, just having some college or postsecondary training offers young people a better shot at good jobs and decent wages than a high school diploma alone.

Despite this, our educational system continues to be stingy when it comes to doling out knowledge, skills and preparation for continuing education. The consequences of our educational parsimony are profound. The U.S. now has the dubious distinction of having the greatest income disparity of any other economically advanced country in the world.[6] Indeed, the present division between rich and poor is at its widest since the 1920s.[7] And virtually all of this vast and widening income gap has roots in a knowledge and skills gap that is also the largest in the developed world. [Chart 5]

The future holds grim prospects for young people who lack sufficient skills, for they are increasingly shut out of good, middle-income jobs. The occupations experiencing the largest growth are those that demand well-developed cognitive skills and postsecondary credentials.[8] More and more, workers with education beyond high school have the advantage in getting and advancing in skilled, blue-collar jobs as well. If the diploma our graduates hold

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Chart 5

High Variability in U.S. Between Those At Highest and Lowest Levels: Largest Gap in Literacy Among Nations

Country	90th Percentile	10th Percentile	Gap: 90th-10th
U.S.	345	182	163
Switzerland/French	329	209	120
Finland	344	225	119
Sweden	361	243	118
Netherlands	335	226	109
Germany	338	231	107
Norway	343	237	106
Denmark	335	236	99

Source: Andrew Sum, Irwin Kirsch, and Robert Taggart. The Twin Challenges of Mediocrity and Inequality: Literacy in the U.S. from an International Perspective. Policy Information Center, Educational Testing Service. (2002)

doesn't provide them the foundation for continued learning, they will also be shut out from re-entry into the education pipeline and their attempts to change their circumstances will be futile.

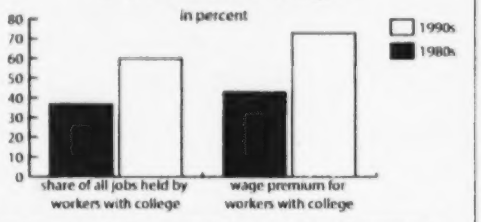
Enough good jobs to go around

While the benefits to the individual are clear, there are some observers who doubt that the national economy could absorb an entire class of well-educated graduates. These skeptics argue that high growth rates still won't produce enough high-paying, high-performance jobs to go around, citing as evidence the large numbers of low-skilled jobs that need to be filled. One of the most vocal critics, Gerald Bracey, has written, "At the societal level, the call by industry for more highly skilled workers is a cynical ploy to drive down the wages of skilled labor." Later in the same piece, he said, "Educating all will take care of the equity situation but will lower wages and leave lots of highly skilled people standing around on street corners currently occupied by the low-skilled."[9]

For the moment we will set aside this argument's highly undemocratic implication that it's in the country's interest to keep some children unskilled so they don't deflate wages for the allegedly more deserving. Instead we will ask if the economic scenario would play out as Bracey imagines. The data show otherwise. Over the last twenty years, both the supply of college educated workers and their wages have steadily increased.[10] [Chart 6] The market has not only easily absorbed more educated workers, but it has continued to reward them as well.

Chart 6

The Proportion Of College Educated Workers Has Increased As Have Their Wages



Source: Carnevale and Fry, "The Economic and Demographic Roots of Education and Training," November 19, 2001

Indeed, it is more likely that we will have too few—rather than too many—skilled workers to meet the demand. The baby boom generation is fast approaching retirement age, taking their knowledge and skills out of the job market. According to Carnevale and Richard Fry, "Unless we increase the quantity and quality of education and training, we are unlikely to generate enough skill to replace the retiring baby boomers, especially given an increasing demand for postsecondary skill levels on the job."[11]

What about the low-end jobs?

It's true that even though the relative proportion of low-skilled employment is shrinking, these jobs will continue to account for a

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significant share of the total job market. But it's wrong to assume that individuals in low-skilled positions will stay in them throughout their working lives. In reality, such occupations generally experience high turnover. About 30 percent of all low-skilled jobs are currently held by young people under 25, who typically move through these positions while preparing for other careers. In many low-end occupations, the proportion is much higher.[12]

This is certainly the case in the food service industry where jobs are known for low skills and low pay. The number of these jobs is already high and demand for workers is projected to increase over the next decade, making food service jobs among the fastest growing in the country. At present, about two-thirds of the nation's six and a half million servers are between the ages of 16 and 19. According to the Bureau of Labor Statistics, the need to constantly replace these young workers—not the creation of new jobs—is the primary reason for high projected growth in job openings for this industry.[13]

Low-skilled jobs for today's young people tend to be way stations, not destinations. Reform critics who point to growth in this sector as an excuse to keep students in low-level courses are not just undemocratic, they are dangerously misinformed.

Skills for success in postsecondary education

If the high school diploma has less and less purchasing power in the job market, its value in gaining access to higher education is even more tenuous. In addition to the high school credential, most four-year institutions want to see SAT or ACT scores, class rank, grade point average (GPA), a high school transcript documenting course-taking and other evidence of applicants' academic capabilities. Even "open admissions" institutions, including two-year colleges, typically require applicants to provide additional information or demonstrate their skills on a test before allowing them to enroll in certain popular academic programs, such as nursing or physical therapy.

Most colleges, in fact, admit freshmen on one basis, but refuse them entry into college-level courses until they have met another, higher set of standards generally hidden from public view. These standards are implicit in so-called "placement tests," which are ordinarily taken after students are admitted. New freshmen who pass the tests are free to begin college-level work in courses for credit. But those who fail aren't. Instead, they are placed in remedial courses—a kind of limbo state for the admitted but not fully accepted, where students see their odds for eventually earning a degree diminish with each additional non-credit hour.

Although the contents of placement tests can vary from institution to institution, and from state to state, they tend to address skills and knowledge typically taught in the sequence of "college preparatory" English and mathematics courses that are offered, but not required in most American high schools. Not surprisingly, students who successfully complete those courses pass the placement tests at high rates, thereby avoiding remedial coursework. But those courses are almost never required for high school graduation and often not required even for college admission. Between one-third and one-half of college bound students never take them.[14]

Unfortunately, the consequences for them

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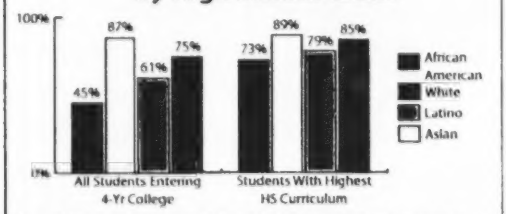
are far graver than a semester or two of non-credit courses. Research conducted by the U.S. Department of Education shows unequivocally that the single biggest predictor of college success is the quality and intensity of a student's high school courses—greater than test scores, class rank and GPA. Students' academic resources also mean more than socio-economic status. The relationship of high-school course-taking to college success is clearest in mathematics. High school students who complete math higher than Algebra 2 (for example, trigonometry or calculus) *double* their chances for earning a college degree.[15]

The positive impact of high school course-taking is even greater for African American and Latino students. For example, fewer than half—45%—of all African American students entering four-year colleges eventually earn a B.A. But among those with a strong high school curriculum that proportion increases to 73%. Likewise, 61% of all Latino freshmen earn B.A.s compared to 79% who come to college having taken rigorous courses in high school. Moreover, the gap in B.A. completions between Whites and students of color is reduced by one-half when all arrive on campus with a strong high school curriculum behind them. [Chart 7]

Chart 7

CURRICULUM COUNTS: Chances for Bachelor's Degree by High School Grads



Source: Adelman, Clifford, "Answers in the Tool Box," U.S. Department of Education, 1999. Table 40: Bachelor's degree completion rates for students in the top two quintiles ... who entered 4-year colleges directly from on-time high school graduation by race.

A mismatch between preparation and goals

In survey after survey, the vast majority of our teenagers are saying they want to go to college. So why do so few complete the courses they need to be admitted and pass the college placement tests?

There are many reasons, of course. But many students don't have the information they need. Often the adults who should advise them—their teachers and counselors—don't know how important these courses are, either.

Research conducted by the Bridge Project shows that many college-bound students simply don't know which courses are necessary not just to enter college, but to begin credit-bearing work. According to their recent report, one of the most common student misconceptions about college readiness is that meeting their high school graduation requirements will prepare them for college. Across the six states in their study, less than 12 percent of students surveyed knew the curricular requirements to their public postsecondary institutions.[16] (see description of the Bridge Project, page 29)

Even parents and school counselors are misled into thinking that courses needed for *admissions* are necessarily the same as college *readiness*. But if the college-prep curriculum students take does not get them through the placement test, the new freshmen will find themselves still taking high school-level courses. Only the campus will have changed.

Higher education hasn't been as helpful as it should be. Few states have clear policies for which courses higher education wants for admissions. The table on pages 10-12 shows the courses that states require for high school

continued on page 13

Do K-12 and Higher Education Agree? A Look At State Policy

Adapted from Aligning K-12 and Postsecondary Expectations: State Policy in Transition, *Janis Somerville and Yun Yi, National Association of System Heads, October 2002*

The National Association of System Heads (NASH) recently examined the extent to which K-12 and higher education agreed at a state level on the nature of coursework that students need during their high school years. In each state, they looked at what K-12 required—both number of courses and topic—and compared that with the requirements from postsecondary institutions within the state. In the summer and fall of 2002, NASH staff conducted phone interviews with K-12 and higher education officials and researched the websites of state education agencies to gather state curriculum requirements for high school graduation and college entry/admissions. The table that appears on these two pages provides an overview of the findings by state for English language arts and mathematics. Other findings, including information about other subject areas, can be found at www.nashonline.org.

In general, NASH found:

- **Very little consensus between K-12 and higher ed.** Almost no states agree across systems. However, the two systems are closer together on *number* of courses than on *topics*.
- **Higher Education—The Missing Partner.** In many states, institutions of higher education have yet to come to agreement on either number or topics for high school coursework that is essential to begin college level study.
- **Too much variation even among high school graduation requirements.** Some states have clearly responded much more aggressively to the changes in the new workplace than others.

n/s=not specified

State	ENGLISH		MATHEMATICS	
	High School Graduation	College Admissions	High School Graduation	College Admissions
Alabama	4	n/s	4	n/s
	Eng. 9, 10, 11, 12	n/s	alg. I, alg. II w/trig., geom.	n/s
Alaska	4	n/s	2	n/s
	n/s	n/s	n/s	n/s
Arizona[1]	4	4	2	4
	include grammar, writing, reading, comp., Amer. Lit., and research methods; 1/2 to include speech/debate	Eng. I, II, III, IV	n/s	alg. I, alg. II, geom., advanced math w/alg. II as prereq.
Arkansas[2]	4	4	3	4
	1/2 oral communications	emphasis on writing; not to include oral comm., journalism, drama or debate	1 alg. or equiv.; 1 geom. or equiv.	alg. I, alg. II, geom., advanced math
California[3]	3	4	2	3
	n/s	n/s	n/s	alg., intermediate alg., geom.
Colorado	n/s	n/s	n/s	n/s
	n/s	n/s	n/s	n/s
Connecticut	4	n/s	3	n/s
	n/s	n/s	n/s	n/s
Delaware	4	n/s	3	n/s
	n/s	n/s	n/s	n/s
Florida[4]	4	4	3	3
	comp. and lit.	3 w/substantial writing	alg. I or equiv.	alg. I and above
Georgia[5•]	4	4	3	4
	grammar/comp.; 1/2 Amer. Lit./comp.	lit. integrated w/grammar, usage, and advanced comp.	alg. I	alg. I, alg. II, geom., advanced math
Hawaii	4	4	3	3
	n/s	n/s	n/s	geom. and alg. II

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State	ENGLISH		MATHEMATICS	
	High School Graduation	College Admissions	High School Graduation	College Admissions
Idaho+	4 lang. study, comp., and lit.	4 comp. and lit.	2 from applied math, business math, alg., geom. and above	3 alg. I or applied math I; geom. or applied math II or III; alg. II
Illinois	3 emphasis on reading and writing skills; 1/2 may be in oral communications	4 written, oral, and Eng. lit.	2 1 may be related to computer tech	3 intro. through advanced alg., geom., trig., or fundamentals of computer programming
Indiana+	4 n/s	4 lit., comp., and speech	2 n/s	3 alg., alg. II, geom. OR integrated math I, II, III
Iowa+	n/s n/s	n/s n/s	n/s n/s	n/s n/s
Kansas[6]	4 n/s	4 excludes journalism, speech, drama, theater, and debate	2 n/s	3 3 at or above alg. I
Kentucky	4 Eng. I,II,III,IV	4 Eng. I, II, III, and IV or AP	3 alg. I, geom.	3 alg. I, alg. II, geom.
Louisiana[7]	4 Eng. I,II,III, and Eng. IV or Business Eng.	4 Eng. I, II, III, IV	3 max. of 2 intro. courses	3 alg. I, alg. II, geom.
Maine	4 n/s	4 reading comp., lit., communication skills, research and reporting skills	2 n/s	3 alg. I, alg. II, geom.
Maryland[8]	4 n/s	4 n/s	3 1 alg., 1 geom.	3 alg. I or applied math I and II; formal logic or geom.; alg. II
Massachusetts	n/s n/s	4 n/s	n/s n/s	3 alg. I; alg. II; geom. or trig. or comparable coursework
Michigan	n/s n/s	n/s n/s	n/s n/s	n/s n/s
Minnesota	n/s n/s	4 comp. and lit.	n/s n/s	3 2 alg. and 1 geom.
Mississippi	4 n/s	4 w/substantial comm. skills	3 alg. I, geom.	3 alg. I, alg. II, geom.
Missouri	3 grammar and usage, comp., lit., and comm.	4 2 w/emphasis on comp. and writing; 1 may be speech or debate	2 n/s	3 alg. and beyond including alg. II
Montana	4 n/s	4 w/emphasis on written and oral comm. skills and lit.	2 n/s	3 alg. I, alg. II, geom.
Nebraska	n/s n/s	n/s n/s	n/s n/s	n/s n/s
Nevada	4 reading, comp., writing	4 emphasis on comp., rhetoric, and Amer., Eng. and world lit.	3 n/s	n/s n/s
New Hampshire	4 n/s	n/s n/s	2 n/s	n/s n/s
New Jersey	4 n/s	n/s n/s	3 n/s	n/s n/s
New Mexico	4 n/s	n/s n/s	3 n/s	n/s n/s

continued on page 12

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State	ENGLISH		MATHEMATICS	
	High School Graduation	College Admissions	High School Graduation	College Admissions
New York[9]*	4	n/s	3	n/s
	n/s	n/s	math A or math B	n/s
North Carolina[10]*	4	4	3	4
	Eng. I, II, III, IV	grammar, lit., and comp.	alg. I	alg. I, alg. II, geom. and 1 above OR alg. I, alg. II and 2 above OR integrated math I, II, III and one above
North Dakota	n/s	4	n/s	3
	n/s	written and oral comm. skills	n/s	alg. I and above
Ohio[11]*	4	n/s	3	n/s
	n/s	n/s	n/s	n/s
Oklahoma	4	4	3	3
	grammar, comp, and lit.	grammar, comp., and lit.	alg. I and math above alg. I	alg. I and above
Oregon	3	4	2	3
	1 written comp.	Eng. lang. lit., speaking, listening, writing w/emphasis on writing expository prose all 4 years	n/s	alg. I and 2 advanced math
Pennsylvania	n/s	n/s	n/s	n/s
	n/s	n/s	n/s	n/s
Rhode Island*	4	n/s	2	n/s
	n/s	n/s	n/s	n/s
South Carolina*	4	4	4	3
	n/s	2 w/ grammar and comp., 1 w/ Eng. Lit., 1 w/ Amer. Lit.	n/s	alg. I, alg. II, and geom.
South Dakota	4	4	2	3
	1 1/2 writing, 1 1/2 lit., 1/2 speech	grammar, lit., and comp.	alg. I	alg. I and above
Tennessee*	4	4	3	3
	n/s	English I, II, III, IV	alg. I or math for tech II or integrated math I	alg. I; alg. II; and geom. or advanced math w/geom.
Texas[12]	4	n/s	3	n/s
	English I, II, III, IV	n/s	alg. I, alg. II, geom.	n/s
Utah	3	n/s	2	n/s
	n/s	n/s	alg. I and geom. OR applied math I and II OR 2 advanced	n/s
Vermont	4	n/s	3	n/s
	n/s	n/s	n/s	n/s
Virginia	4	n/s	3	n/s
	n/s	n/s	2 in alg. I or above	n/s
Washington	3	4	2	3
	n/s	3 lit. comp.	n/s	alg. I, geom., and advanced math
West Virginia	4	n/s	3	n/s
	English 9, 10, 11, 12	n/s	2 in alg. 1 and above	n/s
Wisconsin	4	4	2	3
	written and oral comm., grammar, lit.	n/s	courses which incorporate elements of alg., geom., stats.	n/s
Wyoming	4	4	3	3
	n/s	3 w/substantial writing	n/s	alg. I, alg. II, geom.

see reference for NASH Table, pages 30-31

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continued from page 9

graduation alongside those required for entry to state postsecondary institutions. Most states define courses needed for a high school diploma (eight leave this entirely to local school districts). At the same time, only 30 states have established consistent minimum statewide course requirements for admission to their public colleges and universities. Even in states that establish requirements for high school and higher education, the two systems are usually not aligned. In mathematics, for example, just ten states have K-12 and higher education agreement on the number of mathematics courses students should take in high school. Only one agrees on both number and topics.

The misalignment between sectors is not always predictable. In a few notable cases, course requirements for high school graduation actually exceed those for college entry. But the effect in most states is that the curriculum required for graduation—including sometimes even the curriculum labeled as "advanced"—falls short of what students need in order to succeed in either two- or four-year institutions.[17]

For new graduates this means that their high school diploma is no guarantee they meet postsecondary education's course requirements. It's also no guarantee they have the skills they need to get a good job.

Work and college converging

If the courses required for success in college were relevant only to high school graduates who are continuing their education, this mismatch might be tolerable and our efforts could continue to be directed mostly to making sure that college-bound students take the right courses. But this approach ignores the fundamental transformation that has taken place in the workplace—a transformation that wipes out age-old ideas about minimum skills. And the knowledge and skills that prepare students for college are looking more and more attractive in the least expected places.

"It made me mad"

Students feel the brunt of our inequitable, out-of-date system, yet we rarely hear their voices. If we took time to listen, we wouldn't mistake adults' low expectations for some kids as student apathy.

In my 11th grade year, I went to my counselor to try to get a Spanish class. I had a floor covering class, where you learn to put down tiles and lay down carpet. I told my counselor that I wanted Spanish 1, so I could try to meet the requirements to apply to [University of California]. She tried to tell me that I hadn't met my year of technical art, because at my high school you have to have a year of technical art [or] one year of a vocational class [to graduate]. I told her I already did because I had auto mechanics in the 9th grade. I had to bring my parents up there to get out of floor covering and into Spanish 1. Then this year I tried to get into Spanish 2, so again, I could meet the requirements. My counselor told me Spanish 2 was only for students who were going to college, automatically assuming that I wasn't going to college. It made me mad. I got kind of discouraged, but I told her I am going to college and I want this class. Then I did not get the class anyway, because the class was overcrowded.

Marcus McKinney
California high school senior
testimony before the California Senate Education Committee,
April 10, 2002

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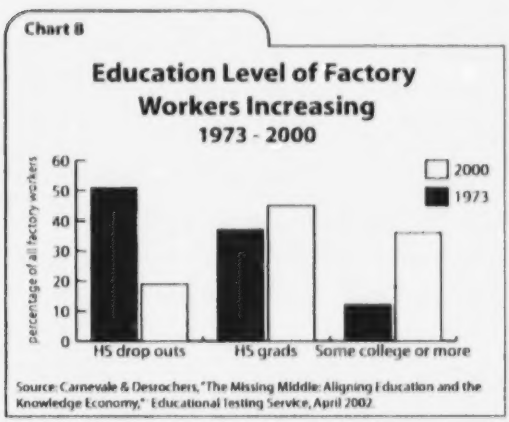
Manufacturing, for example, has for many years been the occupational haven for youth who leave high school without a diploma. In 1973, 51 percent of factory jobs were held by drop outs; by the year 2000, only 19 percent were. More startling is the fact that, in adjusted dollars, the annual wages for drop outs fell by 19% over the same time period. Factory jobs performed by workers with a high school diploma increased somewhat, from 37 percent to 45 percent in 2000, but their wages fell nearly as much as the drop outs'. In contrast, the proportion of factory jobs held by individuals with at least some college *tripled* and their wages held steady or dropped only slightly.[18] [Chart 8]



The National Association of Manufacturers offers advice to young people through its web site by describing the qualifications and opportunities in various industrial occupations. Some of these offer clues to how high the ante has been raised in the preparation for skilled jobs and explains why even the standard high school diploma isn't as valued as it once was. For example:

- tool and die makers must go through four or five years of apprenticeship or postsecondary training, usually in a community college. On average, they earn more than $40,000 per year. The courses they need to enter include algebra, geometry, trigonometry and basic statistics.
- sheet metal workers also go through a four to five year apprenticeship, although it is typically through on-the-job training. A high school diploma is required. Also, technical reading, geometry and trigonometry along with technical courses.
- avionics technicians learn their craft in trade schools. Median annual income in 2000 was also over $40,000. The courses they need include math, physics, chemistry, electronics and computers.[22]

Unlike manufacturing jobs, which are fairly stagnant, installing and maintaining electrical and telecommunications lines is a high-growth occupation. Line installers and repairers are skilled laborers who earn up to $50,000 a year. They generally go through apprenticeship programs, either on the job or through community colleges, after completing high school. According to the U.S. Department of Labor, the skills aspiring line installers and repairers need include algebra and trigonometry.[20]

College-prep for the workplace

Businesses of all types are encountering a need for employees with higher level skills. In unpublished research for the American Diploma Project (see "American Diploma Project," page 29), the National Alliance of Business surveyed officials from 22 occupations, ranging from manufacturing to financial services, about the high-school level skills they believe are most useful for their employees to bring to the job.

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What Courses Are We Talking About?

This report shows that the curriculum traditionally thought of as college preparatory is in fact good for all students, whether they go to college or not, and that previously low-performing students benefit the most.

But what is this so-called "college-prep" curriculum? While states have various definitions, some general patterns emerge:

A "college-prep" curricular path nearly always includes at least:

- 4 years of English;
- 3 years of mathematics including Algebra 1, Geometry and Algebra 2;

And it often includes:

- 1 or more years of mathematics beyond Algebra 2, e.g., trigonometry or calculus;
- 3 years of natural science including such lab sciences as biology, chemistry and physics;
- 3 years of social studies; and
- 2 years of a second language.

The employers unanimously cited the need for strong reading ability. They noted that, on a purely practical level, workers need to be able to read and comprehend informational and technical texts. However, they were also emphatic about the importance of literature, arguing that it helps to develop empathy with people of all cultures, which they say is a necessity when dealing with diverse customers and co-workers.

The employers also said that writing ability is essential. This includes research skills, which they observed are valuable whatever the position, especially the ability to synthesize information from various sources and evaluate its relevance. And they explained that factory workers, repair technicians, managers, engineers and others all need to be able to write coherently, concisely, persuasively and appropriately for audience and purpose.

In mathematics, employers across the board reported they want workers to know data, probability and statistics, and to be competent problem solvers. There was also a strong consensus for the importance of the college-prep mathematics curriculum: Algebra 1, Geometry and Algebra 2. The employers valued this math sequence for its content. But they also noted that individuals with this background stay in the mathematics and science pipeline. They are thus able to gain access to more mathematics as their jobs demand it.[21]

Research has shown that Algebra 2 holds considerable value for later success in college and jobs. Some people find that puzzling because Algebra 2 content is used directly in only a handful of the most technical occupations—or college courses, for that matter. However, the rigor and discipline seem to have other important benefits. In their research, Heather Rose and Julian Betts have examined the positive relationship between taking Algebra 2 in high school and later earnings. They explain some of the effect by the access this course offers to further education. But they also found that the "cognitive effect makes students more productive." They continue:

> [S]tudents who take more advanced math classes learn skills that may be *directly* applicable to certain jobs. They may also learn logic and reasoning skills that *indirectly* make them more productive. Skills acquired through learning advanced math may also teach students how to learn, so that once they are on the job, they are promoted to more demanding and more highly paid positions than those who have acquired fewer "learning skills."[22]

In the business world, there is little doubt that the skills needed for success in work and in college are now converging. But the educational system has not caught up to these changes.

Yes, Virginia, ALL students can learn algebra

Many Americans, including many educators, doubt that all young people are capable of learning subjects like algebra. All Japanese kids, maybe. All Russian kids, even. But for some reason, not our students. In fact, worries about what will happen to those who fail discourage many educators from even trying.

But a growing body of evidence shows that, however well-meaning, these views are dead wrong. The fact is, all students benefit from taking high-level courses regardless of their academic record prior to enrollment.

- *Students of all abilities learn more in college-prep courses.*

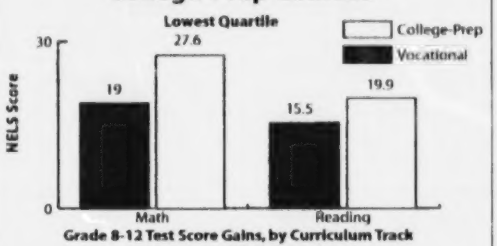
U.S. Department of Education researchers looked closely at what happens with different types of students when enrolled in different high school curriculums. Their analysis found that even students who enter high school with test scores in the lowest quartile grow more in college-prep courses than they do in either the vocational or general courses they are typically enrolled in. [Chart 9]

These findings are mirrored in the work of the Southern Regional Education Board's High Schools That Work Initiative (HSTW), a schoolwide reform model under the leadership of Gene Bottoms that was created primarily to improve achievement among vocational students. In its early years, the initiative sought mainly to raise standards in vocational courses. But that strategy did not produce the desired across the board gains, so participating schools were encouraged to take these so-called "work bound" students and place them for part of the day into college-preparatory courses.

Students in vocational tracks have been traditionally among the lowest achieving and are at the highest risk of failing. Yet HSTW schools that enroll large numbers of such students in high-level courses are raising student achievement and simultaneously increasing the overall percentage of program completers.[23]

Chart 9

Low Test-Scorers Gain More From College-Prep Courses



Grade 8-12 Test Score Gains, by Curriculum Track and Grade 8 Achievement Level

Source: US DOE, NCES, *Vocational Education in the United States: Toward the Year 2000, an Issue Brief: Students Who Prepare for College and a Vocation.*

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"I got up and got my good grades."

Students will rise to the challenge that's presented to them. We need to make sure that all students are given the chance to stretch their intellectual muscles.

When I was going to my junior year ... I went to my counselor and ... told him that I needed Algebra 2. He told me that there was no more room, so he was going to place me in an honors Algebra 2. I didn't have the grades ... to be in that class, but he still placed me in it. By doing that I guess it inspired me to do better and at least get better grades. That's what happened. I got up and got my good grades. Now instead of getting C's and D's, I get A's and B's.

Evelyn Garcia
California high school junior
testimony before the California Senate Education Committee,
April 10, 2002

■ *Students are more like to pass high-level courses than low-level ones.*

Some students will indeed fail intellectually rigorous courses. But it turns out that fewer will fail the more difficult courses than the low-level courses in which we typically warehouse them.

This finding may seem counterintuitive to many educators who protest that giving all kids challenging subject matter is tantamount to setting most of them up for failure. But it holds true even when comparing pass rates of the lowest achievers.

In a recently published study, the architects of HSTW monitored the academic performance of eighth-graders of various abilities in both high and low level ninth-grade courses. The research shows that low-achieving eighth-graders were far more likely to earn a "D" or "F" when enrolled in *low-level* high school English than in *college-prep* English. Interestingly, even formerly high-scoring eighth-graders were more likely to fail low-level high school English. [Chart 10]. Similar patterns were seen in mathematics and science for all except those students in the bottom quartile of performance, who were only *slightly* more likely to succeed in a low level math or science class as they were in the high level counterpart.

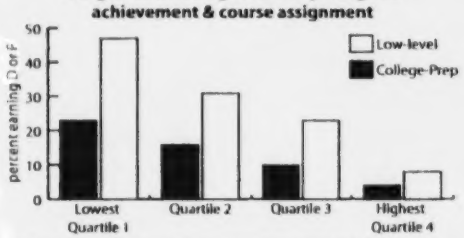
Sociologist Maureen Hallinan also studied the effect of course placement and student achievement in an analysis of comprehensive high schools. Like the HSTW researchers, she found that "assigning a student to a higher ability group increases the student's learning regardless of the student's ability level."[24] Hallinan was able to analyze students' test scores at grades 9, 10 and 11, and track growth according to their subsequent placement in different curricular paths.

The first discovery in her study was that ability groups aren't as homogenous as assumed. In fact, there is a considerable range of "ability" *within* these groups, suggesting that placement is a far more subjective enterprise

Chart 10

Students of All Abilities Are More Likely to Fail Low-Level English Courses

9th-graders earning Ds or Fs by 8th grade achievement & course assignment



Source: Sondra Cooney & Gene Bottoms, "Middle Grades to High School: Mending a Weak Link," SREB, 2002

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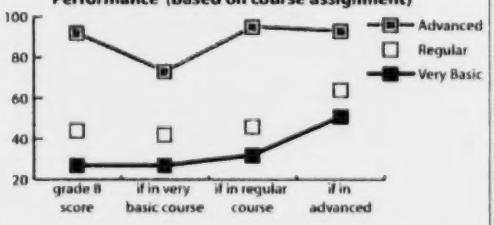
than schools would have us believe.

Because group placement turned out to be so arbitrary, Hallinan was able to compare students in one "ability" group to students with similar characteristics assigned to other groups and then predict test scores according to curricular placement. Chart 11 shows the results. Across the board, students gain the most in "advanced" courses. And once again, those who started out the furthest behind made the most dramatic progress. Students classified as "very basic" moved from the 27th percentile to 51st merely by getting into the top-level math classes.

Chart 11

All Students Perform Better In High- Level Courses

Math Achievement in grades 9-11 by grade 8 Performance (based on course assignment)



Source: Maureen Hallinan, "Ability Grouping and Student Learning," May 2002

Results like these beg the question of what schools tend to call "ability." The conventional wisdom in American education has it that only the "top" students can handle algebra and high-level English. But not only is the identification of "top" students a slippery affair, the unlucky students classified as "low ability" never have a chance. Clearly, these students are *able* when they have *access* to the content. But they have to get into the right courses first.

Educational opportunity still diverging

The last two decades have witnessed expanding enrollments in college-prep courses, but the gains have not kept pace with the tremendous growth in college-going. And the opportunities for college-preparation have not been shared equally among high school students.

The groundbreaking 1983 report from the National Commission on Excellence in Education prompted states across the country to raise their requirements for high school graduation. At the time of the report, only 2% of American graduates were completing the Commission's recommended curriculum: four units of English, three social studies, three science, three mathematics, two in a foreign language and 1/2 unit of computer science. Even when foreign language and computers aren't included, the proportion of completers was just 14%. But by 1998, over half of our graduates—55%—had completed the recommended curriculum in the core subjects and 29% had met the full sequence including another language and computers.[25]

Of course, units alone don't tell the whole story. The content of the curriculum is what makes the difference. And there has been remarkable progress on this front, as well. Just in the last decade, the proportion of graduates completing three years of mathematics through Algebra 2 has increased from 49% in 1990 to 62% in 2000. Another 37% had a fourth year of advanced mathematics under their belts. Chemistry enrollments also grew—from 45 percent to 54 percent—over the same period of time.[26]

Despite this progress, large numbers of

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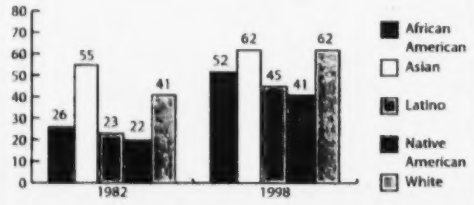
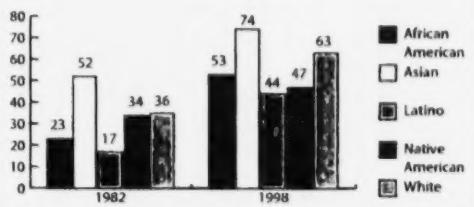
American students remain locked out of the curriculum they need. For students of color, in particular, the gains have not been enough to offset inequities. Algebra 2 enrollments for African American, Latino and Native American high-schoolers doubled between 1982 and 1998. Nonetheless, only one half or fewer of such students take this high-level course compared to nearly two-thirds of their White and Asian peers. Similar patterns are seen with Chemistry. [Chart 12]

Chart 12

More Students Take Algebra 2, But Gaps Persist



The Same Patterns Occur in Chemistry



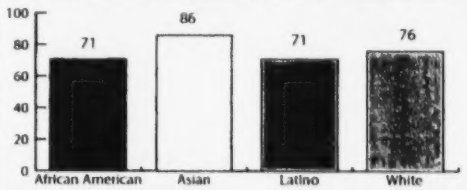
Source: CCSSO, State Indicators of Science and Mathematics Education, 2001

These differences have not prevented minority students from going on to college. Indeed, the best available data suggest a gap of only about five percentage points in the proportion of White compared to African American and Latino youth attending college within two years of high school graduation. [Chart 13] But gaps in course-taking patterns do begin to explain why graduates of color are significantly more likely to attend two-year or proprietary institutions compared to less than half of White freshmen.[27] And they also help explain why such students are considerably less likely to graduate.[28] [Chart 14]

Chart 13

College-going within 2 years: gaps by race fairly small

Percentage Distribution of 1992 high school graduates enrolled in some postsecondary, by race/ethnicity, by 1994.

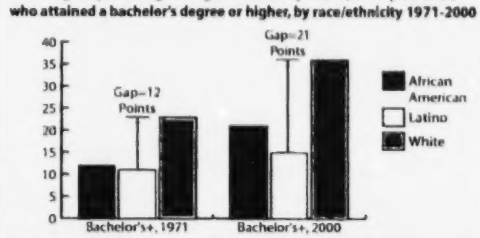


Source: U.S. Dept of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988-94 (NELS:88), Data Analysis System in Access to Postsecondary Education for the 1992 High School Graduates (1997) NCES 98-105

Chart 14

Some groups are falling behind in college completions

Change in percentage of high school completers (25-29 year-olds) who attained a bachelor's degree or higher, by race/ethnicity 1971-2000



Source: U.S. Department of Education, National Center for Education Statistics, The Condition of Education 2002

While these inequities disproportionately strike minority students, too many American students overall find themselves ill-prepared for college when they arrive. Four out of ten high school students who take the ACT for col-

Why Texas Business Backs Rigorous Course-Taking

By John H. Stevens

Since the early 1990s the Texas Business and Education Coalition (TBEC) has been the most persistent and effective advocate calling for all Texas high school students to complete a rigorous academic core course of study. TBEC's involvement began with its *Texas Scholars* initiative, which organizes business volunteers to explain how a rigorous academic foundation will enhance students' future chances for success. The *Scholars* program now operates in more than 350 school districts that serve over two million students. TBEC also helps strengthen the message by working with policy makers to align a major financial aid program and college admissions standards with the state's 24-credit Recommended High School Program. Largely because of these efforts, the percentage of Texas graduates completing the high-level Recommended Program has increased from 15% in 1999 to 51% in 2001.

Scholars began as a local initiative in Longview, Texas, where Joe Randolph, the training manager for Eastman Chemical, observed that new employees lacked the knowledge and skills to succeed in the company's apprenticeship program. Mr. Randolph and Mary Alice Schmitz, a local middle school principal, recruited business volunteers to motivate eighth grade students to complete the 24 credit course of study in high school by explaining the international nature of the economy, the increasing demand for skilled workers, and the relationship between rigorous course taking and future standard of living.

From Longview, *Scholars* spread to other east Texas communities. State Board of Education (SBOE) member Mary Knotts Perkins became an enthusiastic promoter and in 1992 the SBOE endorsed the initiative for statewide implementation. TBEC made *Texas Scholars* the centerpiece of its community outreach activities and the movement began to influence state education policy. The changes have been dramatic. Prodded by TBEC, the State Board of Education voted to deny credit toward high school graduation for below-level courses like "Correlated Language Arts" and "Fundamentals of Mathematics." Then in 1993, Mary Perkins, Commissioner of Education Lionel "Skip" Meno and TBEC were the moving forces behind the SBOE's creation of the Recommended High School Program, modeled after the course requirements of *Texas Scholars*.

Even with all this outreach, however, it was clear that many students were still being routed away from the recommended curriculum. Accordingly, TBEC leaders began talking with state legislators about the importance of a more universal approach. Faced with overwhelming evidence that all students benefit from a rigorous academic curriculum, the legislature acted. Beginning in 2004, students entering ninth grade will automatically be enrolled in the recommended curriculum and can opt out *only* if both the student's parent and a school official agree.

Raising the expectations for high school course-taking was just one piece of the puzzle. TBEC representatives also participated with legislators in a dialogue about "pipeline issues" — not the petroleum kind, but those related to the progress of young people through the K-12 system, on to higher education, and into the workforce. In the 1990s, the state enjoyed a significant financial surplus and legislators wanted to enact a major new financial aid program to help Texas students pay for college. Responding to research finds from ACT presented on behalf of TBEC, the Legislature established the TEXAS (Toward Excellence and Access) Grant Program. Legislators appropriated $200 million for the first biennium and have increased funding since then. Students qualify for TEXAS Grants by completing at least the course requirements of the Recommended Program and demonstrating financial need. In response, several public universities have guaranteed admission to graduates that complete the Recommended Program or made it part of their admissions criteria.

Still, the idea of recommending a 24-credit graduation plan with a rigorous academic core is not universally popular. But Texas business has "stayed the course" with education reform because knowledge and skills are even more important in the workplace now than a decade ago. American businesses compete globally for their share of world markets and the American people compete for their share of good jobs. Everyone – policy makers, educators, students, parents, and the general public – must do their part if our young people are to be adequately prepared to contribute to and participate fully in all aspects of life now and in the years to come.

Business has played a crucial role in building the political will to engage in a serious, standards-based approach to school improvement. It must energize itself also to ensure that all students acquire a solid academic foundation that will prepare them for success after high school.

John H. Stevens is the executive director of TBEC.

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lege admissions had not taken the minimum number of courses that colleges want.[29] Half of our college students need at least one remedial course when they get there.[30] As a consequence, first-year students bail out of school in alarming numbers. One in four freshmen in four-year colleges fail to return for a sophomore year. In two-year colleges, the fall off rate is nearly one in two.[31]

We wouldn't see numbers like these if students had had the right courses in high school. But as long as state policymakers leave those determinations to the different sectors, figuring out which courses students need for different institutions will continue to be the muddle it is.

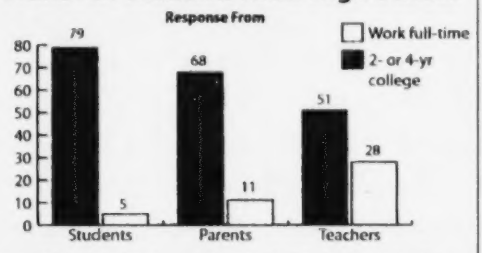
Lacking clear signposts, students must rely on others to provide clues, and sometimes, to help them fight for a seat in the college-prep classroom. But we also have an adult problem. Three years ago, national pollsters asked high school teachers what plans their students had for after graduation. Then they asked the students themselves. The results were eye-popping. Teachers reported that only half of their students planned to attend a two- or four-year college. Their students had different ideas: 79% said that's exactly where they would be going. [Chart 15]

In the disconnect between students' goals and teachers' expectations, students lose, for the system controls the curriculum. And more often than not, the curriculum that would prepare them for college is not the standard. What this means for young people is that their diplomas may not get them the education and training they want and need.

Somehow word is getting out as more students identify the preparation they need and discover ways to get it. But by placing the burden on students—and truthfully, on their parents—to get into the right curricular track, the system allows too much to chance. And the students who suffer are, once again, the very young people who rely most on their schools for guidance.

Chart 15

How Expectations Differ: Plans For Students After High School



Source: Metropolitan Life, Survey of the American Teacher 2000: Are We Preparing Students for the 21st Century?, September 2000.

Districts defy conventional wisdom and get results

When at least three-quarters of our high school graduates are continuing their education, there should be no question that the standard high school diploma should mean college readiness at least. But most systems are not yet open to a change of this magnitude. Part of the reason is administrators' concern about the capacity of the system to deliver the teachers, materials and supports that are called for. But another reason—and a big obstacle—is widespread skepticism about the capacity of all students to master such challenging subject matter.

Fortunately, a few visionary school districts and states are tackling these issues head on and blazing a very new path. San Jose Unified School District in California is one. About half of this urban district's 32,000 students are

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Latino and almost one third come to school with limited English proficiency. Five years ago, the district was reeling under a cloud of public distrust and revolving door leadership. But an intensive process of public engagement gave the school board the support it needed to raise academic expectations for all students. San Jose is now a model for what can be gained by aligning high school graduation to college preparation.

The San Jose story began when the district leadership convened a series of focus groups in the community to discover what was on the minds of its various constituencies, including White and Latino parents, teachers and students. Across groups, participants consistently cited the need for high academic expectations for all students and uniform standards from school to school. In 1997, the San Jose school board responded with higher graduation requirements. San Jose high schoolers now have to complete California's A-G course sequence for college readiness in order to earn a diploma.

Last year, the first students under the new policies graduated with impressive results. San Jose students' progress in reading and mathematics outpaced the state average, with African American and Latino students posting the highest gains [Chart 16]. Between 1998 and 2002, for example, test scores for African American eleventh-graders in San Jose rose seven times as much as their peers statewide. Their gains in mathematics were more than double the state average for African Americans. Similarly, math scores for San Jose's Latinos were nearly twice as large as the state average.[32]

Putting Data into the Hands of Students

Two years ago, a small group of high school students in Washington, D.C., analyzed the master schedules for several local high schools in order to document what they knew instinctively — that large numbers of students were being denied access to college preparatory courses. Among their findings:

- At least three high schools offered as many or more sections of remedial mathematics as Algebra 1 and Geometry combined;
- One high school had 17 times more sections of job training than mathematics;
- One high school enrolled three times as many students in Office Reprographics as in pre-calculus and calculus combined. For the uninitiated, Office Reprographics is the study of "various methods of duplication ... [using] machines commonly found in business offices." In commercially trademarked terms, "learning to Xerox";
- Yet another high school offered nearly twice as many sections of "Office Assistant" as mathematics.

When they combined these findings with achievement data, the young statisticians showed that students in schools with the highest enrollment in vocational classes were three times as likely to perform "below basic" on the Stanford 9-Reading test as their peers in schools with the fewest voc ed students.

As one frustrated student asked: "Even if we did want vocational education, why aren't we being trained to become dentists and CEO's instead of just their assistants and copy kids?"

He's still waiting for an answer.

Source: data and analysis by YOUTHink student organizers, 2001.

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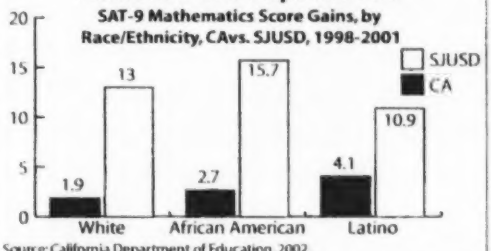
Chart 16

Math Improvement at SJUSD Far Outpaces State Average; Achievement Gaps Narrow

SAT-9 Mathematics Score Gains, by Race/Ethnicity, CAvs. SJUSD, 1998-2001



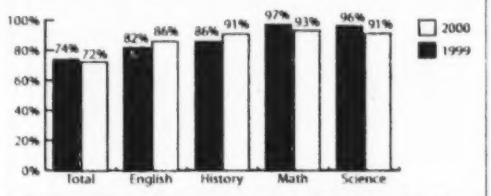
Source: California Department of Education, 2002.

More importantly, San Jose students are keeping up with the new graduation requirements even though the courses are tougher. Skeptics of a high-level default curriculum often express the fear that students won't be able to keep up with the work and will be forced to drop out. But San Jose's experience is proving otherwise. Chart 17 shows that the percentage of present high school seniors on track for graduation is nearly unchanged compared to their peers of three years ago who graduated under the old system of minimum requirements. It should be no surprise, then, that San Jose is producing more A-G graduates even while the state average is declining.

Chart 17

Students Are Keeping Up With Requirements

Percentage of SJUSD Seniors On Track with Graduation Requirements, by Subject, 1999 (minimum Requirements) - 2002 (A-G Requirements)

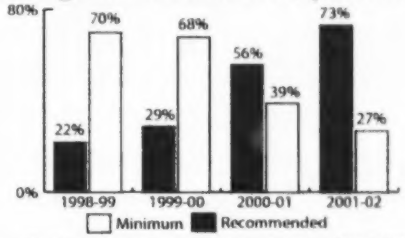


Source: Unpublished data from San Jose (CA) Unified School District, 2002.

Houston, Texas, shows on a large-scale how to implement high graduation standards and succeed with students that others have all but abandoned to the ranks of the minimally educated. Houston Independent Schools serve 210,000 students, making it the seventh largest district in the nation. Like many urban districts, Houston's student population is majority minority: 87% are either African American or Latino. In addition, 79% live in low-income households. College-prep courses became the recommended curricular path for Houston high schoolers beginning with the class of 2000. Four years ago, only 22% of the Houston's graduates completed the college-prep sequence while the vast majority, 70%, finished with just the minimum course requirements. Today that relationship has flip-flopped: 73% of graduates have completed the recommended college-prep curriculum and only 27% leave with the minimum. [Chart 18]

Chart 18

More Houston Students Completing Recommended Curriculum Since 2000 Change in Graduation Requirements



Source: The Houston Chronicle, Houston Independent School District, 2002.

Yet another urban school district in Texas proves that high standards are entirely compatible with high graduation rates. Throughout the 1990s, El Paso high schools focused on expanding student enrollments in rigorous courses. A recent national study reports that graduation

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rates in this high-poverty, high-Latino district are 14th highest among the 50 largest school districts in the country—a group that includes such affluent suburban communities as Fairfax County, Virginia, and Montgomery County, Maryland, in addition to the major urban districts.[33]

San Jose, Houston and El Paso are just a few communities that are proving that high standards won't push kids out the high school door, as critics fear. Indeed, they appear to be keeping them in.

Texas and Indiana take action

The idea of aligning high school graduation and postsecondary entry requirements is beginning to take hold at the state level, as well.

Texas has taken a major step toward aligning K-12 and higher education by making the college-prep track the recommended curriculum for all students. Beginning with the class entering ninth grade in 2004, students will automatically be enrolled in this 24-unit curriculum unless they and their parents explicitly choose not to be.

Interestingly, the leadership for this policy change came largely from the business community, rather than from either K-12 or higher education. John H. Stevens is the director of the Texas Business Education Coalition, the business group that was the foremost advocate for these changes. Mr. Stevens explains how this came about on page 20.

Policymakers in Indiana are poised to take the recommended curriculum in a new direction. Indiana's education roundtable works across the K-12, higher education and business sectors in the state. In 1994, this committee put forth a plan to raise educational standards in the state, and in response, the legislature established the college-prep sequence of courses, the so-called Core 40, as the recommended curriculum for all high school students. But even though students were required to begin the sequence, they weren't necessarily expected to complete it.

The education roundtable is now promoting the Core 40 as the required curriculum for high school graduation. They further recommend that the Core 40 assessments be aligned not only with college admissions criteria, but also with standards for college placement. As a further incentive to students, the Roundtable is proposing to tie Core 40 completion to state financial aid eligiblity.

A 21st Century Curriculum

These leading districts and states are beginning to teach us that the curriculum that once seemed to make sense for the few now represents the educationally sound course of action for all of our students.

We think that following their lead is the very least all districts and states should do, for more than any other, this change immediately signals society's expectation that all young people can and should be prepared not for college or for work, but for both. Guidance counselors and savvy parents should not be the only ones to know which courses will prepare students for college. Everyone deserves the same information and the same access.

But a strong "default" curriculum is just a first step measure. There is still a lot of work to do before the curriculum will be perfectly aligned and working well for every young per-

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son, and K-12 cannot do all the heavy lifting. Higher education needs to take a long overdue look at admissions and placement policies. Not only are they often inconsistent with high school graduation requirements, they are also inconsistent between postsecondary institutions, and even between admissions and placement into college-level work in the same institution.

Clearly, a consensus about what "college ready" means is needed. And because this curriculum will be the standard for all secondary students, the content needs to be justified with better reasons than "the way it's always been done." Research shows, for example, that Algebra 2 in high school is a strong predictor of college success and beyond. What about other mathematics, notably data, probability and statistics? This strand of math is conspicuous by its absence from admissions and placement tests, but is necessary for work and citizenship in addition to other disciplinary studies. What level of reading and writing skills are likewise predictive?

Business also has a responsibility to be more thoughtful and explicit about the skills that are valuable in the workplace. There are many states with business organizations that are actively involved in education reform. As in Texas and Indiana, their advocacy can do a lot to promote policy change.

Implementing the new common curriculum will, of course, raise another set of issues. Schools will need enough teachers knowledgable in their subjects and in strategies for helping all students master high-level content. They will need new models for structuring time and support for students and teachers alike. They will also need aligned assessments for both individual diagnostic use in the classroom and for school accountability.

Above all, schools will need to break the logjam of outdated beliefs that define the present high school diploma. The knowledge and skills that today's young people need to succeed in the 21st Century far exceed those that were enough for their counterparts a mere generation ago. The only prediction we can confidently make about future jobs is that they will change. Even those youngsters who go directly to work after high school will likely find themselves wanting more training, more education at some point in their working lives.

But we must keep in mind that we are not just preparing workers, we are preparing citizens. It's our own interest, then, as much as our responsibility to make sure that all of our young people are prepared for the future, whatever it brings.

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What Students Need to Succeed

An Agenda for Change

For today's young people, success in work and in college begins on the same curricular path in high school. Establishing this new common curriculum and providing it to all students will take meaningful K-16 efforts in which K-12, higher education, business and policymakers all have roles to play.

Start with your data

Regardless of whether these K-16 action plans are formed at the local, state or national level, they should be driven by data. Indeed, the first task for K-16 partners is to collect and analyze their own data. They should look at enrollments, achievement and attainment of their students both in high school and college, and examine how resources, including qualified teachers, are distributed. If possible, they should track student high school course-taking and test scores, and compare these to their performance in college and the workplace.

With data in hand, policymakers, educators and communities can make sure students have the curriculum they deserve by providing the following:

High school courses aligned to postsecondary requirements

It may sound obvious, but it needs to be said: students cannot learn what they have not been taught. Algebra, for example, is foundational to later success. But students will never even see algebra in courses like "Contemporary Mathematics."

■ ***States and districts need a rigorous "default" high school curriculum.*** The best data we have show that students enrolled in the college-preparatory track in high school are more successful whatever they do after high school. An immediate action, then, is to make this sequence the recommended or "default" curriculum for rising ninth-graders, at the very least for courses in English language arts and mathematics. The only way high-schoolers can be enrolled in something less rigorous is if students and their parents sign themselves out of the high-level courses.

Like Texas, states and districts should take the additional step of refusing to award high school credit for courses such as "Correlated Language Arts," "Fundamentals of Mathematics," and other low-level substitutes for learning English and mathematics.

■ ***Higher education needs to agree on a common definition of the skills students need to begin credit-bearing courses.*** As important as it is for K-12 to get its ducks in a row, aligning the system works two ways. For its part, higher education needs to be clear about the level of reading, writing and mathematics skills incoming freshmen need to begin credit-bearing work. Different admissions requirements are fine. But consistent placement policies that include two- and four-year institutions will give high schools the clear target they need to prepare their graduates. Colleges will benefit, too, when they can staunch the current flow of resources into remediation and channel them back into their academic programs.

Good teachers and instruction

Once students get into high-level courses,

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they need knowledgeable teachers who can provide instruction equal to the quality of content. While we acknowledge that staffing presents a huge challenge for some districts—especially those serving large numbers of low-income students and students of color—there are things policymakers can do to help:

■ ***States and districts should examine their employment practices.*** Richard Ingersoll of the University of Pennsylvania has found that restrictive state and district policies about recruitment, hiring and class size often keep qualified teachers from the students who need them most. In addition, he shows that schools are being drained by a constant "revolving door" in teaching—a phenomenon that hits low-income schools the hardest.[34] More support from principals can go a long way toward keeping good teachers.

■ ***Policymakers should look to new sources to attract knowledgeable individuals into the classroom.*** Several alternate route initiatives have been very successful at attracting lawyers, engineers, and other professionals into teaching. The New Teacher Project, for example, has recruited thousands of talented professionals and trained them to fill hard-to-staff teaching positions in New York and other urban districts.

And don't forget local colleges and universities. There are plenty of college faculty who are currently teaching high school level content in remedial courses. If at least some of them could teach that content at local high schools, they could help make sure that students get it right the first time around. Likewise, students who are ready for Advanced Placement courses or mathematics beyond Algebra 2 could take these courses on local college campuses, earning both high school and college credit and relieving some of the staffing pressures on high schools.

■ ***Policymakers should provide resources for substantial, subject-based professional development to support teachers in their efforts to teach rigorous content to all students.*** Research shows that professional development can have a profound impact on student achievement when it is school-based, ongoing and focused on high-level curriculum.

■ ***Higher education needs to align teacher preparation programs and certification policies to reflect the content of the new common curriculum.*** Perhaps the most important contribution higher ed can make is to help make sure there is a sufficient supply of teachers qualified to teach all students to high levels of performance. Colleges of arts and sciences and two-year institutions should work alongside the schools of education because they all have a role in the preparation of teachers.

■ ***States and districts should allocate resources for the development of new high school courses.*** Every day we continue to learn more about the knowledge and skills that students need to succeed after high school. With appropriate resources, teams of college and high school faculty—perhaps with the participation of business—could develop exciting new courses that will more effectively engage students with high-level content.

Time and support for students to learn challenging content

While we know that all students can handle a rigorous high school curriculum, this is not to say that they will learn it in the same ways and on the same schedule. Some students will move along quickly, as they do now. Others

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will need extra time, support and even different instructional methods in order to reach high standards.

■ ***Time.*** It's easy to say that some students need more time to master certain content, but many administrators already look at a cramped school day and wonder if more is added in one area, what will have to come out. But it turns out that there is a lot of wasted time in the school schedule that could make room for more instruction.

A thorough analysis of master schedules can reveal where time can be recovered to make room for extended instruction for students who need it and planning time for teachers' continuing professional development.

■ ***Support for students.*** As we have shown, most students will rise to the occasion when given access to high-level courses, good instruction and sometimes a little extra help when they need it. But there are also some students who will need significant support in order to reach higher levels of performance.

Regardless of how well students are prepared for high school level work, schools cannot lose sight of where students must be when they graduate. States and districts must provide whatever time and support students need to get there including support for teachers to make sure they succeed.

The federal government has a role, too

Federal policymakers can do a lot to help make sure all high school students have the benefit of high-level curriculum. They can:

- Send a clear, consistent message that the federal government's primary goal in supporting high schools is to promote high-level academic achievement for all students. High school programs that support separate academic tracks for work-bound and college-bound students should not be supported with federal funds.
- Require states receiving federal funds for secondary education to document and publicly report disaggregated data on the course-taking patterns and corresponding achievement levels of high school students.
- Limit support for high school career and vocational programs to programs that prepare students for postsecondary educational opportunities. Some of these opportunities will take the form of certificate or degree programs, while others might be apprenticeships or on-the-job training programs. But all federally funded career and vocational programs should prepare high school graduates for further education so that they can advance their careers.
- Require states receiving federal funds for postsecondary education to analyze and publicly report disaggregated data regarding the correlation between course-taking patterns in high school and college access and success. Specifically, states should be required to report the relationship between course-taking in high school and: 1) college admission; (2) the need for remedial coursework in college, and; (3) college graduation for all students enrolled in publicly supported institutions of higher education in the state.

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National Projects Working Toward K-16 Alignment

A handful of key national projects are at work on various pieces of K-16 alignment. These efforts can inform districts and states as they shape policies to connect high school with postsecondary success. We describe a few of these below:

American Diploma Project

The American Diploma Project (ADP), a partnership of four national organizations and five states, is a collaborative effort to ensure that American high school students have the knowledge and skills necessary for success following graduation, whether in college, the workplace or the armed services. Launched in 2001with funding from the Hewlitt Foundation, the organizations-Achieve, Inc., the Education Trust, the Fordham Foundation and the National Alliance of Business-have worked with Indiana, Kentucky, Massachusetts, Nevada and Texas to build constituencies and develop policies to support a coherent K-16 system.

At project's end in 2003, ADP will publish a set of end-of-high school benchmarks that integrate the knowledge and skills needed for success in college and the workplace. ADP will also share the experiences of the five participating states over the course of the project as they worked toward K-16 alignment.

More information about ADP can be found at their web site: **www.americandiplomaproject.org**.

The Bridge Project

Under the leadership of Stanford University researchers, Michael Kirst and Andrea Venezia, the Bridge Project has investigated the policies, perceptions, and practices that relate to the transition of students from secondary to higher education. The project anticipates that this research will engage educational institutions and state policymakers in strengthening the alignment between higher education admissions-related requirements and K-12 curriculum frameworks, standards, and assessments. For more information, please visit their website at **www.stanford.edu/group/bridgeproject**.

Standards for Success

Standards for Success is an initiative to help students and universities gain a broader understanding of what skills students need to acquire or improve upon in order to succeed in entry-level university courses. Directed by David Conley at University of Oregon, Standards for Success has identified a series of statements entitled "Key Knowledge and Skills for University Success," which will be communicated to textbook producers, high school teachers, students, and parents.

For further information, please visit **www.s4s.org**.

ACT Standards for Transition

The ACT's Standards for Transition define the specific skills that correspond to different scores on the ACT college admissions test. These statements are intended to help students, parents and educators understand what students need to be successful in college. More information can be found on the ACT website: **www.act.org**.

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References for NASH table from pages 10-12

[1] Meeting the college admissions course requirements is one of three ways in which students can demonstrate competency for admission into Arizona colleges.

[2] The required four units in math for college admissions in Arkansas begins with the high school graduating class of 2004.

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College Admission Social Studies requirements do not include: Contemporary American History; World Cultures; World Geography or Global Studies; Practical Arts.

[3] The college admissions requirements are for the UC and CSU Systems. Both Systems have agreed to use the same A-G Curriculum requirements for college admissions. The requirements as presented in the above table are effective as of Fall 2003.

[4] In addition to specifying course requirements as above, Florida provides a detailed list of courses that meet college admissions requirements for each of the four core subject areas.

[5] In addition to specifying course requirements above, Georgia provides a detailed list of courses that meet college admissions requirements for each of the four core subject areas and foreign language.

[6] The required math course requirements for admission into colleges in Kansas is effective beginning with the entering class of 2006.

[7] Statewide requirements for admission into Louisiana colleges go into effect Fall 2005.

[8] The college admissions requirements are for the University System of Maryland (USM). The USM includes the majority of the public four-year universities/colleges in Maryland.

[9] New York's high school course requirements for math, science and foreign language are effective with entering freshmen Fall 2001 and later.

[10] UNC is phasing in more rigorous requirements each year until Fall 2006. The foreign language requirement is effective Fall 2004. The math requirements are effective Fall 2006.

[11] In fall 2003, the high school science requirement in Ohio will be 3 units.

[12] High school requirements are for the recommended college-prep curriculum. In Texas, all entering high school freshmen in Fall 2003 and later will be required to enroll in the recommended curriculum.

[13] Students entering grade 9 in 2004-05 and later, will be required to take four units in social studies.

•GA, NC, RI, SC, and TN do not have a regular/standards diploma/curriculum path. These states have differentiated college-prep. and vocational ed. diplomas/curriculum paths. For the purposes of this table, we included data on the minimum level of requirements needed for graduation. GA—tech prep.; NC—Career Prep.; Rhode Island—Career Prep.; SC—Tech Prep.; TN—Tech Prep.

+In Idaho and Indiana, high school graduation course requirements are by semester hours; to maintain consistency in the data table, we translated the semester hours into year long credits.

General notes on course requirements for high school graduation and college admissions

- For statewide high school graduation course requirements, most states either set minimum course requirements for a diploma or provide minimum curriculum frameworks. States that do not specify the number of Carnegie units for high school graduation or college admissions leave it up to school districts and may have statewide accreditation standards, which may include course requirements.
- Statewide college admissions course requirements are either set by the state or the state's SHEEO office. States that do not specify the number of Carnegie units for college admission leave it up to systems and/or colleges and universities.
- In some cases where states specify course requirements beyond simple Carnegie units, we summarized the information provided.
- Some states may provide more details on what specific courses can and cannot count toward requirements.

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The Education Trust was created to promote high academic achievement for all students at all levels, kindergarten through college. While we know that all institutions could better serve their students, our work focuses on the schools and colleges most often left behind in efforts to improve education: those serving Latino, African American, Native American and low-income students.

Thinking K-16 is published with the intent to share lessons learned in these communities with policymakers as well as with educators and members of the public concerned with the quality of education provided our neediest young people.

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